

IS THERE A DIFFERENCE BETWEEN SUPERVISING INTERNATIONAL AND DOMESTIC GRADUATE STUDENTS IN ENGINEERING AND IT?

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Abstract

This paper explores a key issue identified in two studies of factors influencing the success of international and culturally and linguistically diverse (CALD) higher degree research graduate students. The studies include “*A model for research supervision of international students in engineering and information technology disciplines*” (MRS), which focused on identifying factors that influence successful supervision of culturally and linguistically diverse (CALD) and international higher degree research (HDR or graduate) students in Engineering and IT disciplines in three Australian universities, and “*Culture, language and the whole graduate experience: Exploring best practices in international graduate supervision*” (BPS), which focussed on exploring perceptions regarding best practices in graduate supervision by diverse stakeholders across Australia. Findings suggest most supervisors do not differentiate between international (or CALD) graduate students and non-CALD (domestic) students in terms of factors influence success in graduate studies.

Keywords: Cross-cultural supervision, graduate supervision in Engineering and IT, international students.

1 INTRODUCTION

Higher research degree (HDR) students (e.g., PhD, Professional Doctorates or Masters by Research graduate students) contribute significantly through their knowledge, skills and talents. They provide human capital, knowledge and innovation which is critical to the development and growth of modern economies [1]. HDR graduates contribute to Australia’s skills base as well as helping to expand and maintain high knowledge and research profiles. Studies have shown that HDR students contribute to two thirds of the research at universities and international evidence shows that up to three quarters of private sector patents draw on public research [2]. Increasingly large numbers of international students are pursuing higher degree research qualifications in the universities across Australia [3], the majority of whom come from China, India, Republic of Korea, Malaysia, Vietnam, Thailand, Indonesia, Nepal, Brazil, Saudi Arabia and other countries [4]. Data shows that 12 per cent of international HDR graduates remain in Australia after the completion of their degrees [1].

In general, international students are seen to contribute positively to the Australian economy through fees and utilization of goods and services for onshore students and other offshore educational services. Of these, 66.5% of the onshore income was from the higher education sector [5]. The international HDR students also contribute to the global workforce and are a resource for developing and maintaining a diverse, modern and globalized Australian economy. They contribute through knowledge, skills, talent and opportunities for collaborative research, as well as economic and social links that can potentially help Australia sustain a high quality of human capital help and maintain competitiveness in the global market [4] [6]. HDR students also make an important contribution to innovation. In line with Australia’s innovation goals, and in order to increase businesses investing in research and development, Australia needs people with research and technical skills [2]. Studies conducted in the United States show that the movement of international students is closely related to domestic innovation evidenced by numbers of patents, scientific publications, citations and science and engineering output for local universities [7]. There is, therefore, need to maintain and encourage international HDR enrolments [4], and to provide appropriate support to these students towards successful completion of their studies.

The impact of language and culture on the integration and academic performance of CALD students in Australia have been investigated for several decades. The effects of language and culture on the assimilation and integration of students [8], their learning styles compared with Australian students [9], perceptions and misconceptions about international students [10], and more recently, the effect the culture of international students has on local students [11], are well documented. These studies

indicate that the differences appear to be seen more at an individual student level, rather than broadly reflective of any specific culture, although culture and language may play an important role in influencing the expectations some students have upon initial arrival in Australia. However, to date, little research has explored to what extent supervisors perceive cultural or linguistic diversity to have an impact on overall graduate success, although these issues have begun to be addressed (see [12], [13], [14], [15]).

Australian universities have responded to this increase in international student numbers by putting in place a range of supervisory frameworks to help students settle more easily into the different research cultures. Efforts to improve research training performance have emphasized the importance of timely, and high quality research degree completions. Examples of such programs include the 'Research Training Scheme' (RTS), University of Technology Sydney's (UTS) 'First Consortium', Queensland University of Technology's (QUT) 'Introduction to Research for International Students' (IRIS), and University of Western Australia's (UWA) 'Facilitating International Research Students Transition (FIRST) Program'. While most universities offer resources for improving the support to international students and their supervisors, funding limitations and development costs are often high and a targeted approach to where support would be better directed and more cost-effective is needed. Therefore, it is important to understand whether in fact supervisors perceive CALD and non-CALD (or domestic) HDR students to have significantly different needs, and if, so, where any such needs are perceived to exist.

1.1 Background

This paper explores a key issue identified in two studies of factors influencing the success of international and culturally and linguistically diverse (CALD) higher degree research graduate students. The studies include "*A model for research supervision of international students in engineering and information technology disciplines*" (MRS), which focused on identifying factors that influence successful supervision of culturally and linguistically diverse (CALD) and international higher degree research (HDR or graduate) students in Engineering and IT disciplines in three Australian universities, and "*Culture, language and the whole graduate experience: Exploring best practices in international graduate supervision*" (BPS), which focussed on exploring perceptions regarding best practices in graduate supervision by diverse stakeholders across Australia.

Many studies include the suggestion that supervisor training should include a personalized approach which involves incorporating supervisors' personal experiences to help to equip them to identify and address the needs of students from diverse cultural and/or linguistic backgrounds. However, these kinds of proposals make the assumption that supervisors necessarily differentiate between CALD and non-CALD graduate students. This assumption was challenged by the MRS survey results [13],[14], [15]. The MRS project involved a total of 229 students and 69 supervisors from the three universities who completed student or supervisor surveys. Findings challenged a number of myths about international HDR students, including the finding that international HDR students appear to often outperform domestic students in terms of completions; language problems were not generally identified as critical issues by many supervisors; most students were satisfied with their supervision; and most supervisors were satisfied with their students.

The BPS extension project involved a total of five workshops, which were given around Australia between June and November 2014, including Canberra (e.g., the University of Canberra), Melbourne (e.g., the University of Melbourne), Newcastle (e.g., the University of Newcastle), Perth (e.g., Edith Cowan University), and the Sunshine Coast (e.g., the University of the Sunshine Coast). These workshops involved approx. 57 participants, who represented over 15 different Australian higher educational and related institutions, resulting in widespread dissemination of the findings across the Australian higher education sector. The BPS workshops, which focused on facilitating participant exploration of issues related to cross-cultural awareness, perceptions of different stakeholder groups, and identification of strategies to address key issues in supervision, attempted to further clarify the degree to which supervisors differentiate 'CALD issues' from 'non-CALD' issues in graduate supervision, by including Discussion Activities where participants were invited to differentiate between these issues. Of particular interest to this paper are responses to questions related to differentiating CALD HDR students from non-CALD HDR students, from the perspective of graduate supervisors.

2 METHODOLOGY

Five BPS workshops, entitled “Best practices for supervision of international and CALD HDR students: Strategies for identifying key factors influencing graduate student success and providing the best support services for international graduate students” were given at key locations across the country. The workshops involved participants from a number of stakeholder groups, including students, supervisors, and support staff. Workshops began with an overview of the findings of the MRS study, followed by a series of discussion activities, which incorporated a number of key discussion questions related to cross-cultural supervision and which replicated items from the MRS student and supervisor surveys. Of particular interest to this paper are responses to questions in Activity 2, related to differentiating CALD HDR students from non-CALD HDR students.

2.1 Participants

A total of five workshops were given around Australia between June and November 2014, including Canberra (e.g., the University of Canberra), Melbourne (e.g., the University of Melbourne), Newcastle (e.g., the University of Newcastle), Perth (e.g., Edith Cowan University), and the Sunshine Coast (e.g., the University of the Sunshine Coast). These workshops involved approx. 57 participants, who represented over 15 different Australian higher educational and related institutions, resulting in widespread dissemination of the findings across the Australian higher education sector.

In total, 23 participants completed the feedback form across the five workshops. Of these participants, the majority identified as supervisors and/or graduate students. Equal numbers of supervisors and students completed the feedback forms (43% (n=10) were supervisors, 43% (n=10) were students), while 30% (n=7) worked in support services, and 9% (n=2) were involved in policy issues related to graduate and/or international student issues.

2.2 Data collection

The BPS ‘best practices’ workshops were designed to help institutions to identify and explore factors such as culture, language, gender, discipline and training that may influence international graduate students’ success in the context of Higher Education, as well as to identify and disseminate information regarding factors which could influence how supervisors successfully navigate the supervision of international HDR students.

Workshops were designed around an interactional, self-reflective model of awareness raising and holistic problem-solving. The format of the workshops, therefore, included Discussion Activities which allowed participants to examine the types of support offered in their university, identify where such services currently exist and understand the specific providers in their context, and clarify areas where additional services could be developed or added. The workshops also included discussion questions designed to facilitate exploration of understanding and perceptions of the impact of possible cultural and/or linguistic diversity on the supervisory relationship.

The format of the workshops included:

1. dissemination and discussion of the findings of the MRS project via a 30-minute powerpoint presentation;
2. an introduction to project-developed resources,
3. workshop-specific Discussion Activities, which were developed from findings in the large MRS study, and designed to facilitate discussion of cross-cultural supervision issues, and to enhance supervisors’ and other stakeholders’ capacities to improve the quality of supervision practice and develop appropriate support services

Feedback from the workshops was collected using three methods: collection of comments on the workshop Activity Sheets, videotaped discussions, and workshop feedback forms. Most feedback was anonymous, as participants did not sign Activity sheets or feedback forms, and video data was only used for identification of trends, rather than detailed transcription, with participants completing consent forms.

This paper analyses the responses from the Feedback forms, as related to perceived differences between CALD and non-CALD HDR students (e.g., Activity 2). There were three discussion Activities. This paper will focus on responses to discussion questions in Activity 2:

ACTIVITY 2: Sometimes culture can influence expectations about the roles of students and those of different status from them (e.g., supervisors, administrators, etc.).

1. A successful HDR student is one who.....
2. A successful HDR student in my field is one who..
3. A successful CALD HDR student is one who...
4. A successful supervisor of HDR students is one who...
5. The best support services for international HDR students are...
6. I think more training or information on.....would be helpful to me because....

3 RESULTS

The group discussions, based on the Discussion Activities, led to robust, interesting and interactive discussions about experiences and issues facing different stakeholders involved in supervision of international graduate students. A number of participants also wrote-in responses to the discussion questions. These prompt statements were designed to elicit identification of any CALD vs non-CALD HDR comparisons.

3.1 Activity 2 responses

The written comments are discussed in order of the prompt statements.

3.1.1 *A successful HDR student is one who...*

In response to the statement, *“a successful HDR (e.g., general) student is one who...”*, one workshop participant responded *‘has passion, motivated, can write, works hard (completes their thesis)’*. Another stated *“understands his field and expect some guidance from the supervisors”*, and a third *“self-motivated and inquisitive”*. Other responses included *“dedicated to research and will not let obstacles land in the way of completion”* and *“completes his/her PhD studies”*.

These responses can be categorized into four main areas: skills (e.g., *‘can write’*), knowledges (e.g., *‘understands his field’*), attributes or personal traits (e.g., *‘has passion’*, *‘self-motivated/motivation’*, *‘inquisitive’*, *‘dedicated to research’*, *‘will not let obstacles land in the way of completion’*), and learning strategies (e.g., *‘expect some guidance from the supervisors’*). These areas also appear to be consistent with the results of the MRS [15].

3.1.2 *A successful HDR student in my field is one who...*

Similar responses can be seen in the second item, despite the explicitly discipline-specific nature of the *‘in my field’* statement. Several participants did note discipline-specific skills, but also re-emphasized what they had written for the previous more general item (e.g., *‘reads widely, can pick up lab skills quickly (+ all above)’*, *‘self-motivated and inquisitive (as above)’*). Other responses included *“fully immersed in the topic and knows what they’re doing”* and *‘completes Phd studies and above to procedure [sic] into relevant career post-PhD’*. Both of the latter responses appear to be generic responses as well.

3.1.3 *A successful CALD HDR student is one who...*

Of particular interest to this paper, in response to the specifically CALD prompt, only one respondent specifically references language or other CALD skills, although even this response began with first citing generic skills, writing *“all above. Can speak/write English reasonably”*.

Similarly, while another response could be interpreted as CALD-related, arguably most HDR students could be said to need to adapt to the new environments of specific institutions and programs *‘can navigate the intricacies of life in the different context and successfully complete PhD studies...needs to be tough and tolerant of new environment’*.

Other responses were again clearly generic, including *“has knowledge, skills and attitudes to complete his research”*, *“self-motivated and inquisitive”*, and *‘will not be phased by perceived differences but commits to the goal at hand’*.

3.1.4 A successful supervisor of HDR students is one who...

Participants also cited general or generic skills for successful supervisors of HDR students. Examples include *"listens, gives appropriate time, communicates/directs/discusses", "helps students develop their own potential", "does not see differences as lacks", and "can support students and see them through to completion"*.

These responses further suggest supervisors do not appear to differentiate between CALD and non-CALD HDR students.

3.1.5 The best support services for international students are...

Responses to the item regarding support services for international students include generic responses (e.g., *'same as for other HDR students', 'academic skills, pastoral care, involving individual case management style'*), 'CALD-related' responses (e.g., *'language and cultural studies'*), as well as a CALD-related response directed at the general HDR population (e.g., *'cultural awareness programs for the majority population'*). The first two responses are interesting since they appear to further demonstrate supervisors do not differentiate CALD and non-CALD students in terms of support services, despite the specific prompt.

The third comment appears to flip assumptions, by suggesting rather than requiring CALD HDR students to adapt, a better response is to train everyone else (e.g., non-CALDs) to level the playing field.

3.1.6 I think more training or information on...would be helpful to me because...

Interestingly, given the generally generic HDR-oriented responses to the other items, all responses on areas for more training related to increased cultural awareness training (although these responses could also reflect the perceived focus of the workshops).

Responses included *'cultural diversity and communication across cultures (there are difficulties with - rule following, - respect for others', 'cultural expectations of students', and 'cultural impact on research supervision'*.

4 DISCUSSION

Consistent with the findings of the MRS study [15], supervisors did not appear to generally differentiate between CALD and non-CALD HDR students. Qualities that defined HDR success in students were seen to contribute more towards the overall perception of CALD success than pure CALD supervision related factors or supervisor attributes. Thus, from the perspective of many supervisors, the qualities of a good HDR student in these disciplines were the same whether they were CALD or not-CALD, and they did not appear to identify 'CALD-status' as having significant influence on their graduate studies. These findings may have implications for provision of training and support programs.

4.1 CALD vs non-CALD HDR students

Consistent with the findings of the MRS study [15], most supervisors did not appear to differentiate between CALD and non-CALD students in terms of perceived characteristics for successful completion. In other words, qualities that defined HDR success in students appear to contribute more towards the overall perception of CALD success than pure CALD supervision related factors or supervisor attributes [15]. Thus, from the perspective of many supervisors, it appears the qualities of a good HDR student in these disciplines were perceived to be similar whether they were CALD or non-CALD, and they did not appear to consider the CALD issue to have significant influence on outcomes. These results suggested that the factors influencing successful supervision are more general HDR student skills, knowledges and/or attributes.

For example, comments by supervisors in the MRS study [15] included: *"many of the native English speaking students I have interactions with require typically just as much assistance with academic writing as CaLD students"*. Another supervisor wrote *"I don't think the origin of the students has any impact at all."*

4.1.1 When CALD is the norm (for both students and supervisors)

Previous research suggests familiarity with cultural differences, strategies for supervision, and processes in supervision were important to successful supervision of CALD (and non-CALD) HDR students [13], [14], [15]. However, it should also be recognized that comments from many supervisors indicate that in some disciplines, CALD HDR students are the norm, which may influence results. In fact, some experienced supervisors may have considerable experience with culturally diverse students (and perhaps few or no non-CALD students for comparison). For example, one supervisor comments “the HDR postgraduate students I have supervised were overwhelmingly CaLD students...For me the whole matter is a non-issue” [15].

Similarly, these results underline the importance to successful supervision of supervisor familiarity with the educational context and cultural expectations of different educational systems, especially given the MRS finding that 52% of the supervisors in the study did not identify as Australian (e.g., like the CALD students, they came from other countries).

4.1.2 Norms and cultural paradox: The invisible cultural barriers

One issue, which is beyond the scope of this paper, is the degree to which supervisor assumptions regarding ‘general’ or ‘generic’ HDR skills might actually reflect an underlying set of cultural assumptions. For example, being ‘self-motivated’ (or ‘self-directed’) is arguably a trait valued in ‘Western’ cultures, whereas following directions from a ‘guru’ or ‘teacher’ may be more valued in other cultural contexts. Similarly, often sociolinguistic issues (e.g., not the language itself, but appropriate use in terms of politeness, directness, etc.) may influence communication and expectations [12], [13], [15].

5 CONCLUSIONS AND RECOMMENDATIONS

Five workshops, entitled “Best practices for supervision of international and CALD HDR students: Strategies for identifying key factors influencing graduate student success and providing the best support services for international graduate students” were given at key locations across the country, to disseminate the results of the large grant, and to develop participants understanding of best practices in supervision of CALD and international HDR students in Engineering and IT. The workshops involved participants from a number of stakeholder groups, including students, supervisors, and support staff. The participants were very enthusiastic about the topic, and found the format and especially the Activities and topics to be of relevance and use in their supervisory roles.

In general, supervisors did not appear to generally differentiate between CALD and non-CALD HDR students. Qualities that defined HDR success in students were seen to contribute more towards the overall perception of CALD success than pure CALD supervision related factors or supervisor attributes. Thus, from the perspective of many supervisors, the qualities of a good HDR student in these disciplines were the same whether they were CALD or not-CALD, and they did not appear to identify ‘CALD-status’ as having significant influence on their graduate studies. These findings may have implications for provision of training and support programs.

For example, the findings suggest that general workshops and/or support services for all HDR students, rather than CALD-specific ones, may be appropriate options in many cases. Such support services can help to build skills, without marginalizing CALD HDR students (who often prefer not to be identified as ‘different’, and do not want to be separated out at that level of study). Similarly, support services focusing on developing cross-cultural awareness and cross-cultural skills can be given for all stakeholders together (e.g., CALD and non-CALD participants). Thus, CALD participants do not feel stigmatized, and non-CALD participants also develop skills and awareness of issues they need in a collaborative environment.

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